6-17-2016

Leaving Dory: RWU Marine Scientist Weighs In on Impact of Blockbuster Cartoon Franchise

Jill Rodrigues
Roger Williams University

Leaving Dory: RWU Marine Scientist Weighs In on Impact of Blockbuster Cartoon Franchise

From the need for tracking the marine ornamental fish trade to reasons for pioneering tropical fish aquaculture, RWU's marine biologist Andrew Rhyne examines the pros and cons of the aquarium hobbyist

June 17, 2016 | Jill Rodrigues '05

BRISTOL, R.I. – Planning to join the millions of people to catch the debut this weekend of Pixar's highly anticipated sequel, *Finding Dory*? In anticipation of those viewers desiring to buy their own version of the star to keep as a pet, marine science experts from Roger Williams University and New England Aquarium offer a research-based argument to leave Dory on the reef.

Andrew Rhyne – a marine biology faculty member pioneering the development of marine ornamental fish aquaculture at Roger Williams' Wet Lab – and Michael Tlusty – director of ocean sustainability science at New England Aquarium – recently co-authored the article "Finding Nemo – and Dory – is easy. Deciding whether they should be pets is harder" in *The Conversation*.

While clownfish (Nemo) have been captive-bred for decades – including inside the Wet Lab, among about a dozen other rainbow-hued reef fish – for the aquarium trade, they note that Dory's species, the Pacific blue tang, has not been successfully aquacultured, spurring more than 100,000 of the blue-and-black finfish to be plucked from the wild each year for display in home aquariums. But the decision to ban all taking of any reef fish species for the aquarium trade they say is much more nuanced than one might think.

Between leading a weeklong training last week in breeding tropical fish for 18 aquarists from aquariums and zoos across the country at the University's aquaculture facility and heading off next week to the International Coral Reef Symposium in Honolulu, Rhyne sat down for a wide-ranging conversation on the aquarium trade and marine ornamental aquaculture inside RWU's Center for Economic & Environmental Development.

With wild Pacific blue tangs a species of concern, what impact will *Finding Dory* have on the demand for their trade and the coral reefs they inhabit?

When you take a really cool person like Ellen DeGeneres (the voice of Dory) and bottle up all that charisma and put it into an animated character, people are going to find the animal interesting, want to know more about it and maybe keep it as a pet.

Blue tangs are not suitable for most fish tanks because adults grow quite large. But there's still a demand for them and the species is heavily fished for the aquarium trade. All indications are that this species has been locally depleted and fishermen are traveling to more remote areas and areas that haven't been historically fished as heavily. Even a modest increase in demand would probably not be a good outcome on that fishery.

One of the reasons we concluded in the article that Dory should be left in the ocean is because we don't know enough about the fishery and we do know there's some destructive fishing that occurs with this species. In some instances, fishermen use cyanide to collect this fish, and sometimes they take the entire coral head where the fish hide and that's much more damaging than just taking the fish itself.

I was at the Smithsonian last week, inside the Ocean Hall where they have a beautiful reef tank filled with clownfish and blue tangs. *Every single* person came up to the exhibit and said, 'it's Nemo and Dory.' Name recognition is probably as high as it can possibly be. With that kind of name recognition, and little knowledge of the potential impact to the fishery, there's deep concern.

But the real power of the movie is that it gets people interested in the ocean and how our actions affect the ocean. In the film trailer, Dory is caught in a 6-pack plastic ring – every kid who watches that will be very sensitized to the fact that plastic can be a bad thing for ocean life. From an aquarist and ocean conservation standpoint, there are real benefits of connecting kids with the ocean and opening a conversation about important issues and what we're doing to the ocean.

Should wild reef fish be kept as pets?

That's a personal viewpoint for a lot of people – should humans be keeping wild animals as pets. For me, personally, I've been greatly impacted by keeping fish.

Aquariums provide great educational tools – we consider them a gateway to science, because they allow for hypotheses testing and exploring questions.

I talk to a lot of scientists that go back to their first fish tank as one of their key reasons for going into science. *(A young Rhyne first fell in love with neon tetras.)*

My favorite thing is to meet kids that are so excited about their fish tanks and that they've been shaped into going into science based on the interest in their fish tanks. I can't think of a more powerful effect.

Anytime humans can be more connected to their natural environment, there's an opportunity for them to realize their impact on that environment. The trade-off there is what impact is keeping them as pets having on the wild populations and ecosystems.

What responsibility does a company like Disney's Pixar have to promote wildlife conservation when making films that capture children's imaginations like these?

Disney runs a conservation fund. But I think there's quite a disparity between how much money the franchise makes and how much funding they put into the conservation fund.

The movie does have a lot of conservation messaging in it and there's a lot of benefit from that. And you can be pretty certain they made the movie without the idea of making these species popular.

But I've asked them that specific question – what is their responsibility to try to fix these long-standing issues in the trade? I don't know if I've been given an answer to that.

How do you balance collecting fish from the wild and developing species aquaculture for exhibition?

We've published a paper and developed a flow chart that explores whether a species can be cultured. Dory can't be raised in captivity right now – that doesn't mean blue tangs will never be aquacultured, but we're just not there yet with the technology. If the answer is no, then it's going to be sourced from the wild.

Then the next question is whether the species is suitable for aquariums – does it grow too large for most hobbyist fish tanks. Dory should be excluded because they easily outgrow most fish tanks and pose a real hazard of the pet owner releasing it into the wild, thinking it's the humane thing to do. We recommend that none of those kinds of fish should be in the trade at all.

We make this judgment in the lab all the time. There are fish we can culture that are very easy to raise in captivity and would sell very well, but they are completely inappropriate for people's fish tanks. So we in the lab and at New England Aquarium make the call to *not* develop that technology, and we're very vocal about why we do that.

There's 2,300 species in the aquarium trade. There's plenty of diversity to find something interesting. So that's what we did this year with the yasha goby. We picked a fish that's coming into the country in decent numbers, has high value, but has challenges in collecting the deep-water specimens (some inhabit depths of 120 feet). This fish fits into the perfect box of aquarium fish – it's a small size, really beautiful, great for aquaculture because it's not always available and holds a really high value.

We've been able to commercially produce this goby in the lab quite successfully. Hopefully, the fish will go into production in aquaculture facilities in the very near future.

Another species we have in development is the cleaner wrasse, which is another species that should be left on the reef because it's ecologically important. They're collected in high numbers for the trade because they're ubiquitous on the reef and very easy to spot. It would be great to culture that fish to try to supplant that wild production.

How can certain conservation efforts cause more harm than good for the health of coral reefs and the communities that depend on them for fishing and wildlife trade?

It's like game theory – if you ban fishing for the aquarium trade, what's the side effect of that? If we stop collection of aquarium species, does that stop destructive fishing or dynamite fishing – or will it make it worse? If we disallow trade in the U.S., would that be a positive benefit to coral reefs in the Philippines or Indonesia? And the answer is it's highly unlikely. If we're not participating in trade, then we don't really have a say in how those markets act.

If fishermen are making money catching aquarium fish and you stop that activity, they're probably going to fish for something else – and that would likely be a more destructive activity like the multibillion-dollar food-fish trade. People make decisions based on their livelihood before what's best for the environment.

How will your data collection project in partnership with New England Aquarium help scientists better understand the impact of the saltwater aquarium trade?

Our trade data gives the National Oceanic and Atmospheric Administration (NOAA) – and other government agencies that develop endangered species lists – accurate figures of what's coming into the country, and without that they have no ability to assess the impact of trade on a species. There's no reliable data available for them to make an assessment. This project provides that baseline data. *(Read here for Rhyne and Tlusty's interview with 'Outside' on how they'll use data to track blue tang sales following the film.)*

One of the things we see is a species become really popular, very quickly and before you know it, it's been heavily collected and we don't know anything about it. A decade later, we start worrying about its population.

If you have accurate, timely trade data then you can see these spikes and changes, and that can signal the need to fund research to look at these populations, advocate for some monitoring or working with the countries that are exporting these to make sure there are safeguards in place so that overexploitation doesn't happen.

A real-time data technology solution we recently developed for the Wildlife Crime Tech Challenge is a spinoff from the last seven years' of data collection. Using the technology we developed to collect the data, we shifted from looking at tropical fish shipments on paper to capturing that paper digitally, then analyze that data and provide an assessment to the port inspectors so they aren't sifting through mountains of paperwork.

Rhyne and Tlusty's Wildlife Crime Tech solution was recently named a top finalist and presented with a $10,000 cash award and a year's worth of business development support to launch their invention. As a finalist, they are one of 16 competing for four grand prizes each worth up to $500,000.

ACADEMICS LIFE @ RWU FEINSTEIN SCHOOL OF SOCIAL AND NATURAL SCIENCES